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Science and Art Department of the Committee of Council
on Education. Copy [A]

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DIRECTORY
OF
THE INDUSTRIAL MUSEUM
OF SCOTLAND,
AND OF
THE NATURAL HISTORY MUSEUM,
EDINBURGH.



LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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Committee of Council on Education
Schools and Art Department of the Committee of Council
on Education
DIVISION FOR SECONDARY EDUCATION

SCOTLAND AND ART DEPARTMENT
ROAD, WHITEHALL, LONDON
W.C.2

DIRECTORY OF SCOTLAND, THE INDUSTRIAL MUSEUM

THE NATURAL HISTORY MUSEUM
EDINBURGH



PRINTED BY GEORGE LITTLE AND WILLIAM POTTSCOTT
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AGENTS TO THE COMMITTEE OF COUNCIL ON EDUCATION,
THE INDUSTRIAL MUSEUM, EDINBURGH.

EDINBURGH: W. & A. G. LEITCH, 10, NORTHERN BARRICK.
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1901

Committee of Council on Education.

DIVISION FOR SECONDARY EDUCATION.

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|---|---|--------------------------------|
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| <i>and Professor of Technology</i> | | F.R.S. |
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5.

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DIRECTORY

OF

THE INDUSTRIAL MUSEUM OF SCOTLAND.

THE establishment of the Industrial Museum of Scotland dates from 1854. In that year Parliament, influenced by the number of memorials which for a lengthened period previously had been addressed to Government by the various learned bodies, public societies, and representatives of the manufacturing, agricultural, and other industrial interests of North Britain, resolved to institute in Edinburgh a Museum similar to those of Economic Geology and of Industry in London and Dublin. In the votes for that year the House of Commons granted 7,000*l.* for the purchase of a site upon which the Museum should be built, and a further sum was voted for expenditure in the acquisition of specimens, and for the salaries of the officers who should be appointed to collect, arrange, and preserve these.

The site purchased is in close proximity to the University of Edinburgh, lying to the westward, between it and Argyle-square. Besides a considerable open space, it is occupied by two buildings, styled, at the period of their purchase, Argyle-square Independent Chapel, and the Trades Maiden Hospital. As it was not the intention of Government to erect a new edifice till some progress had been made in the collection of objects suitable for an Industrial Museum, the buildings in question were appropriated to their reception, and within the walls a large series of examples of Industrial Art has gradually accumulated, and daily receives additions.

Legal difficulties in the way of transfer of property made it necessary to apply for an Act of Parliament before the purchase of the entire site could be completed, nor was it till 1855 that possession was entered on. In the spring of that year Dr. George Wilson, of Edinburgh,

was appointed Director of the Museum by the Board of Trade, under which the new Institution, as included in the Department of Science and Art, was placed. In autumn of the same year the Director received from the Crown the appointment of Professor of Technology in the University of Edinburgh; the special object of the new chair being the public teaching of the principles of Industrial Science, as illustrated by the existing and prospective contents of the Museum. At the same time a Resident Assistant, having personal charge of the Museum, was appointed; and the Analytical Laboratory rented by the Director was constituted the Laboratory of the Museum, and an Assistant Chemist attached to it. Active operations were commenced in October 1855, and have since continued without interruption. As at present arranged the officials attached to the Industrial Museum are,—

Director—Professor George Wilson.

Assistant Chemist—Mr. Thomas Bloxam.

Resident Assistant—Mr. Alex. Galletly.

Porter—Thos. Tyrie.

In 1857 the Department of Science and Art was transferred from the Board of Trade to the Privy Council Committee on Education, under which accordingly the Industrial Museum is now placed. It is proper here also to state that the Natural History Museum in the University of Edinburgh, under the charge of Dr. Allman, the Professor of Natural History, who holds a Crown appointment as "Keeper of the Museum of Natural History," also ranks under the Department of Science and Art; the Professors of Natural History and of Technology having co-ordinate duties as Curators of the Museums under their respective charge. As far as circumstances permit the existing naturalistic and technical collections are managed as the constituent halves of the prospective new Museum, which will be organized in full when the promised buildings are erected. But as at present the Natural History and Industrial collections are in separate buildings, and under different officers, the statements which follow are limited to the Industrial Museum proper. Professor Allman, Regius Keeper of the Natural History Museum, reports separately on it.

The Industrial Museum of Scotland is not intended to be a Museum of Scottish Industry alone, but a Museum of the Industry of the world in special relation to Scotland.

In its fullest acceptation it embodies, like the similar Museums in the country, a fourfold idea :—

- I. Exhibitional galleries, where the raw, workable, and accessory materials on which Industrial Art is exercised ; the tools and machines employed to modify these ; and the finished products resulting from their modification, including the various stages of progress between the original material and the perfect product, are systematically arranged.
- II. A Laboratory and Workshop, where the qualities of industrial materials and products, and the effectiveness of industrial apparatus and machines are investigated.
- III. A Library, where the special literature of Industrial Art may be consulted.
- IV. Lectures on the contents of the galleries, the investigations of the Laboratory and Workshop, and the records of the Library, as illustrating the various departments of Technology or Industrial Science.

At present the greater part of the objects acquired by purchase and donation for the Museum are collected within the old Trades Maiden Hospital, whilst a number of the more bulky objects are stored in the Independent Chapel. In the former building a few of the objects are so arranged in glass cases as to admit of being examined, though only imperfectly, but the great majority of the specimens are simply stored away in safe receptacles ; nor does the construction of the building allow any other procedure to be adopted, or permit steps to be taken for their free exhibition. The public accordingly only profit by the acquisition of industrial objects to the extent that they are shown at the University Lectures on Technology ; but as the lecture room is at a considerable distance from the temporary Museum, it is impossible to transfer safely, bulky or fragile articles from the one building to the other. In consequence of this state of matters, the accumulation, not the exhibition, of specimens and instruments is the end kept chiefly in view, and it may be stated generally, that the objects being collected are as follows :—

Firstly, such finished products as wrought iron, steel, glass, porcelain, paper, leather, cotton, linen, wool-

len and silken tissues, naphtha, sugar, sulphuric acid, soap, bleaching powder, lucifer matches, and the like.

Secondly, all the intermediate bodies which intervene between such products and their raw materials : for example, between iron ore and steel, between sand and glass, between clay and porcelain, between rags and paper, between skins and leather, between textile fibre and cloth, between coals and naphtha, cane juice and loaf sugar, sulphur and oil of vitriol, palm oil and soap, common salt and bleaching powder, burnt bones and lucifer matches.

Thirdly, the tools, machines, and apparatus required for the conversion of raw materials into finished products, such, in full size or in model, as agricultural, mining, and paper-making machinery, furnaces, mills, lathes, moulds, looms, gas retorts, stills, printing presses, and all the manipulative implements of handicraft trades.

Fourthly, those forms of apparatus which are employed in the application to useful purposes of finished products, and in the exercise of what may be called the dynamical industrial arts. Such instruments are pens, pencils, brushes, thermometers, barometers, lamps for burning solid, liquid, and gaseous fuels; the batteries and other requisites for producing and maintaining the electric light, the whole machinery of the electric telegraph, the whole apparatus of the photographer, and much else.

The Laboratory of the Industrial Museum forms part of the suite of medical class rooms within the gate of the Royal College of Surgeons, Nicolson-street. It is of service to the Museum in four ways :— 1. As a school of analytical chemistry, where, for moderate fees, young men learn the art of chemical analysis as applied to industrial objects. 2. As an analytical laboratory, where, likewise for moderate fees, merchants and others have confidential analyses made of substances, whose composition they seek for their own guidance to know, and where the officers of the Museum may be consulted by those engaged in legal contests, or in other transactions requiring the services of scientific advisers. 3. As furnishing the means for prosecuting, at the cost of the Museum, researches on subjects of public eco-

conomic interest by the director and assistant chemist. Thus an inquiry into the qualities of some of the more important building sandstones of Scotland has already been published, and an investigation into certain of the varieties of glass is in progress. 4. As affording the means of illustrating, by experiments in progress, those departments of industrial science which require experimental illustration in the lecture room. It is hoped that in the new Museum an engineering workshop will be furnished as the complement of the chemical laboratory.

The Library is in a quite rudimentary state, and is at the service only of the officers of the Museum and the more advanced students. Its more immediate purpose is to guide those in charge of the Museum in acquiring, classifying, labelling, and describing the contents of the collections; and to assist the analysts of the Laboratory in the prosecution of researches of public economic interest. The hope, however, is indulged, that when fully developed it will contain a collection of books on applied science in at least French, German, and English, including the records of the patent offices or similar institutions of the civilized countries of the world; geographical, geological, and mining maps and sections, illustrated works on architecture, shipbuilding, machinery, and the like, so arranged as to be accessible for reference and consultation by practical men.

The Lectures delivered in connexion with the Industrial Museum are given by the Director in his capacity of Regius Professor of Technology in the University of Edinburgh; but in default of convenient accommodation within the University, his prelections, with the exception of the introductory one for each year, have been delivered in the one of the class-rooms adjoining the Laboratory, five lectures being given weekly during the winter six months' session. The lectures are strictly systematic, the full course on technology embracing three sessions, in each of which different industrial arts are discussed, prominence being given to mineral, vegetable, and animal technology in successive years, whilst the general principles common to all are taught each session. The third course is now in progress. The lectures are illustrated by the contents of the Museum, by diagrams, drawings, chemical and physical experiments, the exhibition on the small scale of manufacturing processes, and of models and machines at work. The

pupils at intervals visit public works and manufactories along with the Professor.

No provision at present exists for addressing the general public through the organization of the Industrial Museum otherwise than by incidental, informal lectures. Of these many have been given, and when the new buildings are completed, arrangements will be made for periodically and systematically addressing the non-academical sections of the community.

DIRECTORY

OF

THE NATURAL HISTORY MUSEUM, EDINBURGH.

THE Natural History Museum of Edinburgh has been in existence since the year 1812, when it was established in connexion with the University, receiving at the same time for its maintenance a Government grant of 100*l.* a year.

In 1819 Mr. Bullock's museum and the very extensive collection belonging to M. Dufresne, of Paris, happened to be for sale, and a sum of money, amounting to 3,000*l.*, was voted by the *Senatus Academicus* from the funds of the college for the purchase of a selection from Mr. Bullock's museum and of the entire of the collection belonging to M. Dufresne. From the manuscript catalogue which accompanied M. Dufresne's collection it appears that this collection contained 1,600 birds, 2,600 shells, 12,000 insects, 600 eggs of birds, 200 fossils, with a considerable number of radiata, and a few mammals.

In 1820 the Museum was opened to the public at an admission charge of 2*s.* 6*d.*, which was subsequently reduced to 1*s.*, and in 1831 the Government grant was increased to 200*l.* a year, the sum at which it has since remained.

In 1855, by a vote of the Town Council, who are patrons of the University, the Museum was handed over to the Department of Science and Art, then under the Board of Trade; and in 1857 the Department of Science and Art, having been transferred from the Board of Trade to the Privy Council Committee on Education, the Museum passed under the control of the last-mentioned body.

The Museum is situated within the University buildings, and occupies nearly the whole of the west side of the great central quadrangle. It is devoted to the systematic arrangement and display of the various classes of objects which constitute the subject of the Natural History Sciences, botanical specimens alone being excluded, as these are provided for in the Botanic Gardens and Museum under the charge of the Professor of Botany in the University.

The collection is one of considerable extent, and in some branches is exceedingly rich. Almost the whole of it was accumulated by the indefatigable exertions of the late dis-

tinguished Professor Jameson, who, for the period of half a century, held the appointment of Regius Professor of Natural History in the University, and Regius Keeper of the Museum. An important addition has been recently made to it by the will of the late much-lamented Professor Edward Forbes, who bequeathed to it the whole of his own private collection, consisting chiefly of invertebrate animals, among which are many specimens of great interest and rarity.

The contents of the Museum of Natural History may be conveniently considered under three principal heads:—

I. Zoology.

II. Mineralogy.

III. Geology.

I.—THE ZOOLOGICAL COLLECTIONS.

In the accumulation and display of the Zoological Collections three distinct objects have been kept in view:—

1. The formation of a *general* collection, involving as much detail of specific form as is practicable under the limiting conditions of space adequate for display, and funds available for purchase. In some departments this portion of the Museum is already tolerably extensive; but in order that a general collection of species should approach to any thing like completeness, a far greater amount of space would be needed than can reasonably be expected to be ever available here, and the present Keeper considers that the resources of the Museum will be much more profitably applied in the completing of the British and Typical Collections, than in any attempt to heap together a vast accumulation of species from all parts of the world.

2. The formation of a collection of *British species* intended to illustrate as far as possible the *Fauna of the British Isles*. This collection is arranged and displayed so as to afford ample facility for the comparison and identification of British species; and it is certain that the use of such a collection, correctly labelled and arranged, will enable the student of British Zoology to pursue his researches with immeasurably less labour than would be possible without the assistance thus afforded.

In order to render it as useful as possible, it was deemed advisable to indicate the general geographical distribution of the species in the British Isles, and with this view a conventional system of colours has been adopted in the labelling of the objects, and explained upon a card affixed to each case.

3. The formation of a *Typical* Collection of Animals. This collection is intended to illustrate the leading types of animal form, and, consequently, does not aim at the accumulation of mere species. Though still deficient in many types, it is steadily progressing, and when further completed, will probably prove the most useful section of the Zoological department. It will possess, at least for the general visitor, an educational value which cannot be expected from a mere accumulation of species, into whose details it is vain to suppose that the public can enter, and which can leave upon the mind of the visitor nothing but confused impressions of a multiplicity of forms, among which he can recognise no definite relations, and whose endless details must too frequently only dishearten the student, and render the collection, in a great measure, powerless as an agent of public instruction.

II.—THE MINERALOGICAL COLLECTION.

This is very extensive, and contains many beautiful and valuable specimens. It is contained in a series of horizontal glazed cases, and is thus displayed in the best possible way for admitting an inspection of the specimens.

III.—THE GEOLOGICAL COLLECTION.

This contains an extensive series of rocks, which, for want of space, are as yet but partially arranged, and a collection of fossils, which though tolerably complete in some departments, is still very deficient in others. The Keeper, however, is actively engaged in making additions to the Palæontological series, and characteristic fossils of the British formations, and of some of their continental equivalents are being rapidly accumulated. The stratigraphical arrangement is that which is adopted, and notwithstanding its numerous deficiencies, the collection will, even in its present state, enable the student of Palæontology to form a good general idea of the past life of the Globe during the successive great geological epochs.

The correct labelling of all the specimens in the Museum is an object of primary importance, and much time and labour is devoted to it. In some cases, as where the specimen is invested with some peculiar interest, a short descriptive note is added, and objects too minute for satisfactory inspection are occasionally accompanied by an enlarged drawing. It is believed that such notes and drawings must add greatly to the value of the Museum.

as an instrument of public instruction, and the Keeper looks forward to carrying out both plans more extensively when the increased space at his disposal will enable him to do so with advantage.

Besides the collection thus contained in the Museum proper, and open to the public under the restrictions to be presently mentioned, there is a large miscellaneous collection, contained in a suite of supernumerary rooms at the East side of the College quadrangle. The want of space has thus necessitated the exclusion of this collection from the general one. It consists chiefly of a series of Fishes and Reptiles preserved in spirits, an extensive collection of Mammal Skeletons, and a very valuable series of Sub-Himalayan Fossils, presented by Dr. Falconer and Col. Colvin.

The situation of the rooms, and the crowded condition of the objects render it necessary to close this collection to the general public; but to *bonâ fide* Students, desirous of examining any of the specimens, every facility of access is always granted.

In store rooms under the University Library, a great number of additional objects have been accumulated, but no attempt has been made to display them, and they are much safer by being allowed to remain undisturbed in their present cases, until such time as additional space may be afforded for their proper exposition.

Attached to the Museum there is also a small Library, consisting of such Works on Natural History as are needful for Museum purposes; together with a collection of Natural History Diagrams.

The Museum was originally established in immediate connexion with the Natural History Chair of the University, and the Regius Keeper of the Museum also held the appointment of Regius Professor of Natural History in the University. These relations have been all along maintained, and continue undisturbed under the recent arrangements by which the Museum has been transferred from the University to the Government, under whose immediate control it is now placed.

The Regius Professor of Natural History delivers Lectures on Natural History to the Students of the University, and to such of the general public as may desire to join his class. These Lectures are delivered in a class room connected with the Museum, and embrace Zoology, Geology, and other branches of the Natural History Sciences and, are illustrated by the contents of the Museum and by diagrams.

The following officials are at present attached to the Museum :—

Regius Keeper.—Professor Allman.

Assistant Conservator.—Mr. J. B. Davies.

And three Museum Attendants.

REGULATIONS REGARDING ADMITTANCE.

On the transference of the Museum to the Department of Science and Art certain changes were introduced by Government into the terms of admission, with the view of rendering the collection more available than it had hitherto been for purposes of public instruction. Instead of being as formerly open to the public only on an admission fee of One Shilling, it was now resolved that the charge for admission should be reduced to Sixpence, and that one day in the week should be absolutely free.

These regulations came into operation on the 8th of October, 1855, and no more convincing proof of their efficient working could be adduced than the fact that, between that date and the 31st of December 1857, no less than 242,422 persons visited the Collection.

To members of the Natural History Class of the University the privilege hitherto acceded to them, of entering the Museum at all times free of charge, was continued, and the same privilege was now extended to Students of Natural Science in the Free Church College. It is not necessary, however, for the Student to be connected with either of the above bodies to obtain facility of access to the Museum, for every *bonâ fide* Student of Natural History may obtain, on application to the Regius Keeper, a special ticket, which will admit the holder free to the Museum, "for purposes of study."

The general Students of the University of Edinburgh are admitted free as formerly, on one close day in each month on presenting their matriculation tickets, and this privilege has been also extended under the new regulations to the general Students of the Free Church College, and to those of the United Presbyterian College.

Besides the above special cases of admission, members of the Town Council and Professors in the University have at all times free access to the Museum, with the power of introducing members of their families.

The following officials are at present attached to the
Museum:—

Reviser Kopper—Professor Allman
Assistant Conservator—Mr. J. R. Davis
And three Museum Attendants.

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that date and the 1st of January 1857 no less than
212,421 persons had been admitted.

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